Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. **(Original)** A method for determining a strain hardening property of a pipe, comprising:

a step of defining pipe dimensions where a diameter D, a thickness t, and a required critical local buckling strain ε_{req} of the pipe are set as conditions to be satisfied;

a step of acquiring a strain hardening property for acquiring the strain hardening property in the vicinity of a buckling point of the pipe satisfying the conditions set in the step of defining the pipe dimensions; and

a step of setting the strain hardening property as a condition to be satisfied by the stress-strain curve of the pipe.

2. **(Original)** A method for determining a strain hardening property of a pipe, comprising:

a step of defining pipe dimensions where a diameter D, a thickness t, and a transport pressure of the pipe used for a pipeline are temporally set on the basis of at least transport volume and conveying distance of pressurized fluid transported by the pipeline;

a step of calculating the maximum axial compressive strain where the structure of the pipeline is designed with consideration of the pipeline route with the pipe having the diameter and the thickness that have been temporally set, and where the maximum axial compressive strain generated in the pipe when the transport pressure, ground displacement and/or an external force are exerted on the designed pipeline is determined;

a step of defining a required critical local buckling strain for defining the required critical local buckling strain ε_{req} on the basis of the maximum axial compressive strain;

a step of acquiring a strain hardening property for acquiring the strain hardening property in the vicinity of a buckling point of the pipe satisfying all the conditions of the diameter D, the thickness t, and the required critical local buckling strain ε_{req}; and

a step of setting the strain hardening property as a condition to be satisfied by the stress-strain curve of the pipe.

3. **(Original)** A method for determining a strain hardening property of a pipe, comprising:

a step of defining pipe dimensions where a diameter D, a thickness t, and a required critical local buckling strain due to bending of the pipe are set as conditions to be satisfied;

a step of converting critical local buckling strain where the required critical local buckling strain due to bending is converted into the required critical local buckling strain ε_{req} due to compression with a quantitative relationship between the

critical local buckling strain due to bending and the critical local buckling strain due to compression;

a step of acquiring a strain hardening property for acquiring the strain hardening property in the vicinity of a buckling point of the pipe satisfying all the conditions of the diameter D, the thickness t, and the required critical local buckling strain ε_{req} due to compression; and

a step of setting the strain hardening property as a condition to be satisfied by the stress-strain curve of the pipe.

4. **(Original)** A method for determining a strain hardening property of a pipe, comprising:

a step of defining pipe dimensions where a diameter D, a thickness t, and a transport pressure of the pipe used for a pipeline are temporally set on the basis of at least transport volume and conveying distance of pressurized fluid transported by the pipeline;

a step of calculating the maximum bending strain where the structure of the pipeline is designed with consideration of the pipeline route with the pipe having the diameter and the thickness that have been temporally set, and where the maximum bending strain generated in the pipe when the transport pressure, ground displacement and/or an external force are exerted on the pipeline is determined;

a step of converting critical local buckling strain where a required critical local buckling strain due to bending is set on the basis of the maximum bending strain, and then the required critical local buckling strain due to bending is converted into a required critical local buckling strain ε_{req} due to compression with a quantitative relationship between the critical local buckling strain due to bending and the critical local buckling strain due to compression;

a step of acquiring a strain hardening property for acquiring the strain hardening property in the vicinity of a buckling point of the pipe satisfying all the conditions of the

diameter D, the thickness t, and the required critical local buckling strain ε_{req} by compression; and

a step of setting the strain hardening property as a condition to be satisfied by the stress-strain curve of the pipe.

5. **(Original)** The method for determining the strain hardening property of the pipe according to any one of Claims 1 to 4, wherein

the strain hardening property is given with respect to the inclination of a tangential line on the stress-strain curve at a tentative buckling point, the tentative buckling point corresponding to the required critical local buckling strain ε_{req} supposed to be on the stress-strain coordinates.

6. **(Original)** The method for determining the strain hardening property of the pipe according to Claim 5, wherein

the strain hardening property satisfies the following equation when the strain hardening property and the tangential line are defined as H and E_{Treq}, respectively:

$$H = \frac{E_{Treq}}{\sigma_{req}} \geq \frac{9}{16}\varepsilon_{req}\left(\frac{D}{t}\right)^2$$

where σ_{req} is a stress of a point on the stress-strain curve corresponding to ε_{req}.

7. **(Original)** The method for determining the strain hardening property of the pipe according to any one of Claims 1 to 4, wherein

the strain hardening property is given as a partial relationship of stress between multiple points by means of a tentative buckling point and one or more auxiliary points when it is hypothesized that the tentative buckling point corresponding to the required critical local buckling strain ε_{req} is disposed on the stress-strain coordinates and the one or more auxiliary points are disposed at positions on the stress-strain

coordinates, the strain values of the auxiliary points being remote from that of the tentative buckling point.

8. **(Original)** The method for determining the strain hardening property of the pipe according to Claim 7, wherein

the partial relationship of stress between the multiple points satisfies the following equation:

$$H = \frac{\sigma_2}{\sigma_{req}} \geq 1 + \frac{9}{16}\varepsilon_{req}(\varepsilon_2 - \varepsilon_{req})\left(\frac{D}{t}\right)^2$$

where

ε_{req}: required critical local buckling strain;

σ_{req}: stress of a point corresponding to ε_{req} on the stress-strain curve;

ε_2: strain at an auxiliary point; and

σ_2: stress of a point corresponding to ε_2 on the stress-strain curve.

9. **(Original)** The method for determining the strain hardening property of the pipe according to Claim 7, wherein

the partial relationship of stress between the multiple points satisfies the following equation:

$$H=\frac{2\sigma_{req}+(\sigma_2-\sigma_1)}{2\sigma_{req}}\geq\left\{1+\frac{9}{32}(\varepsilon_2-\varepsilon_1)\varepsilon_{req}\left(\frac{D}{t}\right)^2\right\}$$

where

ε_1, ε_2: strains at auxiliary points with the buckling point interposed therebetween;

σ_{req}: stress of a point corresponding to ε_{req} on the stress-strain curve; and

σ_1, σ_2: stresses of points corresponding to ε_1 and ε_2, respectively, on the stress-strain curve.

10. **(Original)** The method for determining the strain hardening property of the pipe according to Claim 7, wherein

the partial relationship of stress between the multiple points satisfies the following equation:

$$H=\frac{\sigma_2}{\sigma_{req}}\geq\left\{1+\frac{9}{16}\log_e\left(\frac{\varepsilon_2}{\varepsilon_{req}}\right)\varepsilon_{req}^2\left(\frac{D}{t}\right)^2\right\}$$

where

ε_2: strain at an auxiliary point;

σ_{req}: stress of a point corresponding to ε_{req} on the stress-strain curve; and

σ_2: stress of a point corresponding to ε_2 on the stress-strain curve.

11. **(Original)** The method for determining the strain hardening property of the pipe according to Claim 7, wherein the partial relationship of stress between the multiple points satisfies the following equation:

$$H=\frac{\sigma_2+\sigma_{req}}{\sigma_1+\sigma_{req}}\geq\left\{1+\frac{9}{16}\log_e\left(\frac{\varepsilon_2+\varepsilon_{req}}{\varepsilon_1+\varepsilon_{req}}\right)\varepsilon_{req}^2\left(\frac{D}{t}\right)^2\right\}$$

where

ε_1, ε_2: strains at auxiliary points with the buckling point interposed therebetween;

σ_{req}: stress of a point corresponding to ε_{req} on the stress-strain curve; and

σ_1, σ_2: stresses of points corresponding to ε_1 and ε_2, respectively, on the stress-strain curve.

12. **(Original)** The method for determining the strain hardening property of the pipe according to any one of Claims 1 to 11, wherein

a yield-stress range and a tensile-stress range determined by the standards or the required conditions of materials in addition to the strain hardening property are set as conditions to be satisfied by the stress-strain curve of the pipe.

13. **(Original)** The method for determining the strain hardening property of the pipe according to any one of Claims 1 to 12, further comprising:

a determination step for determining whether the pipe having mechanical properties indicated by the stress-strain curve that satisfies a condition can be manufactured when the strain hardening property acquired in the step of acquiring the strain hardening property is set as the condition of the stress-strain curve of the pipe to be satisfied, wherein the pipe diameter and the pipe thickness that are set or temporally set are adopted when it is determined to be manufacturable in the determination step, and the process returns to the step of defining the pipe dimensions and restarts when it is determined to be unmanufacturable.

14. **(Original)** The method for determining the strain hardening property of the pipe according to Claims 13, wherein the determination step comprises a determination when pipes are manufactured by an existing manufacturing method and a determination when pipes are manufactured by a manufacturing method where a design of chemical components of materials and/or

a process design are changed since no pipes are appropriately manufactured by the existing manufacturing method.

15. **(Currently amended)** The method for determining the strain hardening property of the pipe according to any one of ~~Claims 1 to 14~~ Claims 1 to 4, wherein

being a round-bouse type is set as a condition to be satisfied by the stress-strain curve of the pipe in addition to the strain hardening property.

16. **(Withdrawn)** A method for manufacturing a pipe, comprising:

a step of controlling a stress-strain curve of a pipe on the basis of the method for determining the strain hardening property of the pipe according to any one of Claims 1 to 15; and

a step of designing chemical components of materials and/or designing processes on the basis of a condition to be satisfied by the stress-strain curve of the pipe obtained in the step of controlling the stress-strain curve of the pipe.

17. **(Withdrawn)** A pipe manufactured by the method for manufacturing the pipe according to Claim 16.

18. **(Withdrawn)** A pipeline comprising a plurality of pipes corresponding to the pipe according to Claim 17 connected to each other.